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ABSTRACT

In this discussion on how teachers can encourage and develop students' abilities to think critically and creatively it is pointed out that fostering discussion in the classroom opens new avenues of thought and stimulates divergent thinking. Recommendations for helping teachers foster discussion in the classroom are: (1) making reflective statements that provide a sense of what the student has said; (2) describing a teacher state of mind (interest, conviction); (3) inviting the student to elaborate; (4) encouraging questions and waiting longer for answers; and (5) maintaining deliberate, appreciative silence until the student resumes a comment or another enters the discussion. Some illustrations are given of how a teacher may guide classroom discussion to evoke new and creative responses from students. (JD)

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STIMULATING CRITICAL THINKING AND DISCUSSION FORMATS RESEARCH AND STRATEGIES FOR EDUCATORS TO PONDER

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I had a history teacher in high school and I liked him because there was never any uncertainty about what would happen in his class. We would walk in and there would be five questions on the board. We would read the assigned pages and scribble down the answers. A few rapid workers would finish, look up and that would be his cue to say, "Are there any questions?" Then the bell would ring, books would slap shut, and papers would hiss and rustle. High school. Efficiency.

What is this efficiency addicted creature that lurks in so many of us and leeches critical and creative thinking juices out of our school and college classrooms? Maybe a college supervisor would have approved of that teacher's lesson and unit plans. Maybe a principal would have complimented him for not having discipline problems. Maybe it worked for him in a certain hard-for-me-to-approve-of way. He became a vice-principal the year after I graduated. But for me, he was the worst teacher I ever had.

Costa describes another kind of teacher, an effective one conscious of the need to stimulate better student thinking. This teacher reports that he started to examine his "questioning behaviors and students' responses to them."[1]

> I was also curious about the effects of silence and nonjudgemental acceptance. I immediately discovered how difficult it is to structure questions and watch for reactions at the same time.
>
> Given this limitation, I consciously practiced my questioning and response behaviors during a two week period and began to notice a number of things evolving in the class.

The teacher describes this new consciousness about student thinking and his resultant questioning as causing a decline in his lecture and a rise in students becoming "actively involved in what was going on, rather than passively taking notes and listening." Usual nonparticipants began to participate and seemed to understand the material because of the opportunity to talk about it. The number of relevant questions increased as did a greater tolerance for and interest in various responses offered for problems. The teacher described the students as beginning to "risk answers" because their levels of anxiety decreased with their trusting that answers wouldn't be classified as right or wrong.

What that teacher was discovering and describing was what happens when honest discussion becomes a teaching force. Dillon defines discussion as "...covering various activities in which teacher and students 'discuss' what they don't know." [2] Discussion for Stodolsky involves longer exchanges among students "as well as between teacher and students, and questions soliciting student opinions and thoughts, not just right answers." [3]

Efficiency and right answers may represent a problem among educators of national importance. Harvey in Education Weekly, reports on cognitive habits of students and educators. Only 7 percent of liberal-arts majors, 5 percent of preservice teachers, and 4 percent of inservice teachers operated in a cognitive style indicating information integration and interdependence and a tentative rather than absolute view of knowledge. [4]

Notice how teaching experience represented in the above numbers is associated with higher level thought retrograde. Harvey also reported that 35 percent of liberal arts majors, 45 percent of preservice teachers, 55 percent of inservice teachers, 75 percent of principals, and 90 percent of superintendents operated in cognitive styles grounded in absolute "right" or "wrong" factual information.[5] As we teach longer and then graduate to positions of mentorship over teachers, do we become more addicted to certainty and authority? Is it a matter of that old efficiency neurosis getting us more and more under its spell.

But don't assume that the students are vivacious and noble creatures who thirst for high level thought opportunities. Costa describes a group of high school students trying to deal with a teacher's question about the Frost poem, "Stopping by the Woods on a Snowy Evening." The teacher is trying to stimulate thought and discussion about why the final line, "And miles to go before I sleep," is repeated. The students do not leap into animated dialogue. The teacher tries to coax them into commentaries, but they resist. Then one of them says, "Why don't you just tell us the answer." [6]

But look at our culture. Sternberg comments on the flood of books that take an efficiency and authority-based aegis with obedient readers. [7]

> Any number of books exist that detail the '10 easy steps' to the solution of these vexing problems. Such

> books continue to be written, and the new ones continue to sell. Indeed, there will always be a market for such books precisely because none of the authors ever quite succeeds in turning these ill-structured problems into the well-structured ones that their books assure us the 10 easy steps will solve.

Sternberg recommends that teachers involve learners in"stubbornly persistent problems" or the kind that can't be answered away by textbook phrase or teacher authority.[8] He adds that in life, solving a problem may be useless if one is unable to persuade others of the solution. The persuasion process is one of discussion.

Instead of that dogmatic response, a so-frequent indulgence, Paul describes a questioning process with examples of questioning challenges more likely to elicit longer and more reflective responses.[9]

> If that is so, what follows?
> Aren't you assuming that?
> Can I summarize your point as?
> What is your reason for saying that?
> What do you mean when using this word?
> Is it possible that...?
> Are there other ways of looking at it?
> How else could we view this matter?

When I supervise student-teachers, my emphasis is that they should go beyond the short-answer response. I try to encourage consciousness about that goal as well as suggest methodology.

Recently I observed a student-teacher with a group of 4th graders. She asked how long ago dinosaurs lived. An eager child responded, dinosaurs lived on earth from one hundred and five to sixty-five million years ago. The student-teacher was content with it and fired out several other questions. In a subsequent conference I asked the student-teacher if she recalled the brief

response. She did, "sort of." I asked if that lowest level of data dependence could have been extended upward toward interpretation, analysis, and even synthesis. At that point she realized that something vaguely remembered as a "taxonomy of something" might be appropriate. We proceeded to talk about how a follow-up question or questions might have been asked to stimulate pupil thought about how long one hundred million years is, about how this might compare to how long humans have been on earth, and how we know anything about these times on earth so easily provided by a textbook. So the dialogue between the student-teacher and I was enriched because what had been treated as a fact became transformed into more interesting and challenging content.

We must not forget that the student-teacher is a replica of ourselves. The levels of thought and questioning potential represented in Bloom's Taxonomy have been available for over thirty years. But how operational are those taxonomy levels in the planning and actions of teachers from kindergarten through college?

Flanders, in 1960 maintained that teachers dominated verbal and vocal climates in classrooms. Their "teacher talk" and "direct influence" made critical thinking and productive discussion endangered species in classrooms. When teachers remembered to exert "indirect influence," they could maintain such influence for only brief periods. When they asked questions, they asked too many of them, asked them too quickly, failed to wait long enough to encourage reflection and gave a lot of answers themselves.[10]

If Goodlad's reports of productive discussions occupying only 4 to 8 percent of classroom time in his school samples are accurate, our resolutions stimulated by Flanders have crossed few if any reform bridges. I suggest careful reading of some excellent commentaries on critical thinking and effective discussion procedures.

Dillon contrasts recitation with discussion techniques and maintains that the hardest thing for teachers to learn is discussion leadership style. [11]

> They expect the leader to use a directive, questioning, and didactic style and find it disconcerting to participate in a meeting conducted without such a style. then, in their classrooms they continually slip back into a didactic teaching style.

Recommendations for helping teachers foster discussion are: [12]

1. Making reflective statements that provide a sense of what the student has said. Such a technique rewards the participating student and reinforces the idea for the other listeners.

2. Describing a teacher state of mind, such as, "I'm interested, say more," or "I'm becoming intrigued," or "I think you're convincing me."

3. Inviting the student to elaborate. "Keep going," Can you say more about that last idea?" "That's interesting. Why do you say that?" State of mind and idea elaboration are often cooperative ventures and promote each other.

4. Encouraging questions and waiting longer for them to come. Teachers tend to call for questions, pause too briefly, then ask

another one of their own. Longer wait-time after responses is also recommended.

5. Maintaining deliberate, appreciative silence until the student resumes a comment or another enters into the discussion.

Such suggestions do not challenge our understanding. They can be easily expressed and comprehended. But they challenge at the application level. Gall summarizes that there is no lack of printed materials encouraging teachers to ask more higher cognitive level questions. [13] The difficulty may reside in lack of committment to these techniques at the administrative level. Principals and supervisors attend to other matters.

There is research on recommended discussion atmospheres. Bridges describes "openness" as the central concept.[14] There is topic-openness, participant openness, openness to various arguments, openness to various conclusions, and even goal openness represented by teachers who can occasionally suspend their content coverage and efficiency instincts.

Cashin and Mcknight recommend necessary affective qualities for the discussion leader.[15] Included are belief in legitimacy of several viewpoints, willingness to devote time to various viewpoints, promoting group desire to build knowledge, encouraging sincere and truthful expressions, and encouraging respectful listening and speaking.

I suggest reference to Rogers' conviction about the primacy of self-discovered and self-appropriated learning to any discussion leader concerned with climate and leadership qualities.[16]

Writing and speaking about these matters is easy compared to the practice of them. But I recall an extended discussion with a group of college freshmen on the topic of adolescent "storm and stress." the objective was to deal with both sides of the issue. The proposition was that such a state of frequent or high stress does represent the adolescent condition. Pros and cons came fluidly and research supporting the proposition along with that rejecting it was referred to easily and covered with more thoroughness than I had expected.

Age-appropriateness related to topic selection is another consideration. For a group of capable high school juniors, the task might be to analyze a public figure as Freud might analyze a client. Perhaps historical persons could be a discussion focus. Provided as an advance organizer would be an interesting synopsis to provide all with a common knowledge base. How about Lincoln and his generals? Why did they butt heads at various times? The question cannot be closed with a correct answer. Extending discussion into application across eras might determine if the Lincoln-and-his-generals descriptions could be applied to another president. Harry Truman? Lyndon Johnson? Ronald Reagan?

Then there is the race to discover the structure of the DNA molecule with the front runners being Watson and Crick, but with Linus Pauling in hot pursuit. Folklore represents Watson and Crick as the winners. But is that what really happened? Did they win? Is it possible that this historical episode should be represented

as something much more than a race. Could it be that the so-called winners were really building on what the so-called loser had already produced? Robert Weisberg, in Creativity, Genius, And Other Myths-What You, Mozart, Einstein, And Picasso Have In Common, describes Watson and Crick as being indebted to Pauling because of the visual model building approach that he began using years prior to Watson and Crick jumping into the search.[17] There's an important message for the values educator.

But these are high school arenas. What about the lower grades? Elementary children need to transcend fact and textbook certainty. Are there compelling social forces and movements that these students need to address at their own comprehension levels? There is the right to live issue, the right to die, save the whales, save the rain forests and snail darters. What is so great about a snail-darter? There are smoke-filled rooms and interrogation rooms. There are bag ladies, riots, and fifty thousand dollar luxury cars. What might any of these mean to a fifth or sixth grader?

Consider the topic of WILD elephants. Are they worth the concern of children? What about the concern of all of us? Maybe elephants do not have academic integrity for some people. Or when we teach about them, we teach elephant facts such as where they live, how they look, what they eat, and how they sound. We feel good about ourselves if we become slightly more creative and touch upon how they smell and drink water. But how often have children thought about WILD elephants as an endangered species? Perhaps the preliminary task would be having some students talk philoso-

phically about what it means to be an endangered species. How does that happen? Can that ever be a good thing? Then there are WILD elephants. Is it okay if they become extinct as long as we have elephants in zoos, or even in museums. That kind of learning and thinking about a topic starts to build some scaffolding up the taxonomy.

Is it possible that taxonomies of cognitive objectives are viewed by student-teachers as toys for academicians to play with? If so, it means that pleas to understand questioning levels are heard but not processed as significant or having promise for teaching in classrooms. And so the recitations, the repetitive assignments, and other sad quantifications of human thought and spirit march onward with spit-and-polish efficiency.

I need to begin closing this presentation. Perhaps I should briefly remind readers that discussion as a promoter of higher level thinking is not the great and only solution. We promote good thinking by using stimulating materials, conducting experiments, playing games, and listening to others without necessarily responding. If overused, it can oppress teachers and students. Discussions can be inappropriately time consuming and not as good as recitation when the goal is a review of data or quick preparation for an impending event. The teacher with limited time periods and many students in a class may find it difficult to capture the classic college seminar session atmosphere that may not be occurring very frequently on campuses. Discussions can fail in spite of teacher resolve

and preparation. After a few uncomfortable experiences with failed discussions we may all want to head for security of lecture's tall timber. Furthermore, discussion and its techniques may be inappropriate for use with certain Asian or Native American cultures. In their values and communication ethos, it is considered inappropriate for the individual to stand out as discussion participants must.[18]

Maybe I need to risk the exhortation that each of us must excise the efficiency gremlins in our teaching values and techniques. Maybe we need to go off on retreat in search of those messy parts of our teaching identities like asking questions that we don't have answers for and constructing examinations that promote student thinking, but, alas, defy objective scoring. What do we do about tests without objective scoring keys? We sweat them out and respond earnestly to them like we do with other important human problems.

Maybe I need to recommend that each of us encourage students to verbalize about difficult and unusual ideas and then start remembering to wait as some of them begin to build their responses, word upon word and phrase upon phrase...slowly and laboriously because they don't do that kind of thing very often.

Maybe I need to remind myself in front of you about how the best problems are often, as Sternberg says, "ill-structured."[19] And so is trying to decide on a career, on the truth of a story, the wisdom of an investment, or the chances of a marriage succeeding. You don't look up answers for any of those.

Maybe I need to call attention to our need to recognize and help children recognize prejudice, assumption, and exageration in the world around us. Maybe students and teachers need to ponder and discuss how journalists might be tempted to slant a story (although we know they never do), how scholars invent information (although we know they never do), about how statisticians may fudge data (although we know they never do). Some students may think that such things could never happen (just like if you don't love America you should leave it). Other students might surprise us with the cynical convictions that such things happen all the time (and that is why it is such a rotten world). Whichever way it goes, isn't it good to know what they are thinking.

Maybe I need to describe the kind of teacher I've had in mind as I composed these thoughts about thinking and discussion... The kind of teacher who is reflective and quarrels with her or himself over ideas. The kind of teacher who feels a sense of danger that resides in certainty. The kind of teacher who asks for student clarifications, expansions, and explorations of questions and answers. The kind of teacher who remembers to paraphrase student comments and remembers to show understanding and appreciation of them. The kind of teacher who focuses on the complementary parts of a student response and like a good mentor is not an occasion for student embarrassment or loss-of-face. The kind of teacher fortunate enough to have administrators smart, alert, and sensitive enough to encourage and accommodate that kind of teacher.

Maybe the kind of teacher I have been extolling would agree with Dewey.[20]

> If we once start thinking, no one can guarantee where we shall come out, except that many objects,ends, and institutions are doomed. Every thinker puts some portion of an apparently stable world in peril, and no one can wholly predict what will emerge in its place.

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